

REMARKS

Applicant amended claim 44. Support for the amendment can be found, e.g., at Fig. 1 of the specification. Claims 26, 28-32, and 34-52 are presented for examination.

The Examiner rejected claims 44-52 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,248,305 (Zdrahala). As amended, independent claim 44 recites a method of making a medical balloon catheter comprising extruding a tube comprising a first layer comprising liquid crystal polymer, and forming the tube into a balloon. Forming the balloon comprises radially expanding the tube.

As acknowledged by the Examiner, Zdrahala does not expressly teach a balloon. Indeed, Zdrahala does not disclose or suggest a balloon at all. In any case, Applicant submits that one skilled in the art reading Zdrahala would not be motivated to radially expand the tubing of Zdrahala.

Zdrahala is directed to a tubing that can be steered through a blood vessel by twisting and pushing one end. For such a tubing, Zdrahala discloses that it is highly desirable for the tubing to exhibit good rotational stiffness in addition to axial stiffness. (See, e.g., col. 1, lines 23-25.) To form a tubing with good rotational stiffness, Zdrahala extrudes tubing through an extrusion die while rotating certain component(s) of the die. As a result, the tubing exhibits a degree of circumferential orientation that provides rotational stiffness. (See, e.g., Figs. 2 and 3, and col. 2, lines 7-28.)

In light of Zdrahala's stated objective of enhancing rotational stiffness, one skilled in the art would not be motivated to radially expand the tubing. Radially expanding the tubing would stretch the tubing and reduce rotational stiffness. This is clearly contrary to what Zdrahala expressly desires. Accordingly, Applicant requests that the rejection be reconsidered and withdrawn.

The Examiner rejected claims 26, 28-32, and 34-52 as being unpatentable over claims 1-18 of U.S. Patent No. 5,270,086, and over claims 1-25 of U.S. Patent No. 6,132,824, under the judicially created doctrine of obviousness-type double patenting. Applicant acknowledges the Examiner's indication that claims 26, 28-32, and 34-43 would be allowable if terminal

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disclaimers were filed to overcome the double patenting rejections. Applicant intends to file the appropriate terminal disclaimers upon an indication that claims 44-52 are allowable.

Accordingly, Applicant believes that the claims are in condition for allowance, which action is requested.

Attached is a marked-up version of the changes being made by the current response. Enclosed is a Petition for Extension of Time and the fee. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: DECEMBER 2, 2002

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Version with markings to show changes made

In the claims:

Claim 44 has been amended as follows:

44. (Amended) A method of making a medical balloon catheter, the method comprising:

extruding a tube comprising a first layer comprising liquid crystal polymer; and
forming the tube into a balloon,
wherein forming the balloon comprises radially expanding the tube.

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Pending Claims

26. (Twice Amended) A medical balloon catheter comprising an inflatably expandable balloon configured to be attached to a catheter, the balloon having an extruded layer comprising liquid crystal polymer (LCP), wherein the balloon has a radial expansion less than about 10 percent when inflated to seven atmospheres.

28. The medical balloon catheter of claim 26 wherein the extruded layer is biaxially oriented.

29. The medical balloon catheter of claim 26 wherein the extruded layer consists essentially of liquid crystal polymer (LCP).

30. The medical balloon catheter of claim 26 further comprising a second extruded layer comprising a polymeric material different from that of the first-mentioned layer.

31. The medical balloon catheter of claim 30 wherein the first layer consists essentially of liquid crystal polymer (LCP).

32. The medical balloon catheter of claim 30 wherein the balloon is the product of coextruding the first-mentioned and second layers.

34. The medical balloon catheter of claim 30 wherein the first layer is biaxially oriented.

35. The medical balloon of claim 30 wherein the second layer is an adhesion layer.

36. The medical balloon of claim 35 wherein the adhesion layer is disposed toward the interior of the balloon relative to the first layer, which is disposed toward the exterior.

37. The medical balloon of claim 30 comprising a third layer.

38. The medical balloon of claim 37 wherein the third layer enhances lubricity and is disposed towards the exterior of the balloon relative to the first and second layers.

39. The medical balloon catheter of claim 26, wherein the balloon has a radial expansion not exceeding three percent when inflated to seven atmospheres.

40. A medical balloon catheter comprising an inflatably expandable balloon configured to be carried by a catheter, the balloon having a first extruded layer comprising liquid crystal polymer, and a burst pressure greater than seven atmospheres.

41. The medical balloon catheter of claim 40, wherein the balloon has a second extruded layer comprising a polymeric material different from that of the first layer.

42. The medical balloon catheter of claim 40, wherein the first layer is biaxially oriented.

43. The medical balloon catheter of claim 40, wherein the second layer is disposed toward the interior of the balloon relative to the first layer.

44. (Amended) A method of making a medical balloon catheter, the method comprising:
extruding a tube comprising a first layer comprising liquid crystal polymer; and
forming the tube into a balloon,
wherein forming the balloon comprises radially expanding the tube.

45. The method of claim 44, wherein the first layer consists essentially of liquid crystal polymer.

46. The method of claim 44, comprising co-extruding a second layer with the first layer, the second layer comprising a polymeric material different from that in the first layer.

47. The method of claim 46, comprising disposing the second layer towards the interior of the balloon relative to the first layer.

48. The method of claim 46, comprising co-extruding a third layer disposed towards an exterior of the balloon relative to the first and second layers, the third layer enhancing the lubricity of the balloon.

49. The method of claim 44, comprising biaxially orienting the first layer.

50. The method of claim 44, comprising blow molding the tube into the balloon.

51. The method of claim 44, comprising bonding the balloon to a catheter body.

52. A medical balloon catheter formed by the method of claim 44.